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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/703,034	10/31/2000	Joseph R. Zbiciak	TI-30553	8913

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EXAMINER

DO, CHAT C

ART UNIT	PAPER NUMBER
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2124

DATE MAILED: 06/02/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/703,034

Applicant(s)

ZBICIAK, JOSEPH R.

Examiner

Chat C. Do

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 10/31/00; 1/17/01; 2/13/01.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-2 and 6-13 are rejected under 35 U.S.C. 102(e) as being anticipated by Peleg et al. (U.S. 5,983,256).

Re claim 1, Peleg et al. disclose in Figure 8 a method of performing a dot product operation (col. 19 lines 49-55 and col. 21 lines 27-32) with rounding and shifting in a microprocessor in response to a single rounding dot product instruction (col. 15 lines 20-25), the method comprising the steps of: fetching a first pair of elements (source 1 r1 and i1) and a second pair of elements (source 2 r2 and i2); forming a first product of the first pair of elements ( $i1*i2$ ) and a second product of the second pair of elements ( $r2*i1$ ); combining the first product with the second product to form a combined product (adding the first product and second product as seen in table 6a in col. 15); rounding the combined product to form an intermediate result; and shifting the intermediate result a selected amount to form a final result (col. 12 lines 64-68 and col. 14 lines 36-42).

Re claim 2, Peleg et al. further disclose the step of shifting truncates a selected number of least significant bits of the intermediate result (col. 14 lines 36-42).

Re claim 6, Peleg et al. further disclose the step of rounding treats the intermediate result as a signed integer, such that when an overflow occurs, the intermediate will wrap from a largest positive value to a negative value (col. 12 lines 64-68).

Re claim 7, Peleg et al. further disclose an overflow is not reported (col. 12 lines 64-68).

Re claim 8, Peleg et al. further disclose the step of fetching comprises the steps of: fetching a first operand (source 1 in table 6a col. 15); fetching a second operand (source 2 in table 6a col. 15); extracting one of the first pair of elements (r1) and one of the second pair of elements (i1) from the first operand; and extracting another one of the first pair of elements (r2) and another one of the second pair of elements (i2) from the second operand.

Re claim 9, Peleg et al. further disclose the step of forming treats a one of the first pair of elements as a signed number value (i1 in the real component of table 6a in col. 15) and treats another one of the first pair of elements as an unsigned number value (r2 in the real component of table 6a in col. 15).

Re claim 10, Peleg et al. further disclose the step of combining comprises subtracting the product of second pair of elements from the product of first pair of elements (real component of table 6a in col. 15).

Re claim 11, Peleg et al. further disclose the step of combining comprises adding the product of second pair of elements to the product of first pair of elements (imaginary component of table 6a in col. 15).

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Re claim 12, Peleg et al. further disclose the steps of forming and combining operate on a plurality of pairs of elements (Figure 8 and col. 21 lines 20-24).

Re claim 13, it is an apparatus claim of claim 1. Thus, claim 13 is also rejected under the same rationale in the rejection of rejected claim 1.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 3-5 and 14 are rejected under 35 U.S.C. 103(a) as being obvious over Peleg et al. (U.S. 5,983,256) in view of Suzuki et al. (U.S. 5,276,634).

Re claim 3, Peleg et al. do not disclose clearly in detail the step of rounding by adding a rounding value to the combined product to form the intermediate result, and wherein the step of shifting shifts the intermediate result right by a selected shift amount. However, Suzuki et al. disclose in Figure 25 the step of rounding (267-272) by adding a rounding value (267) to the combined product to form the intermediate result (output of 269), and wherein the step of shifting shifts the intermediate result right by a selected shift amount (271). Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention is made to add a rounding method with shifting the results as disclosed in Suzuki et al.'s invention to Figure 8 of Peleg et al.'s invention

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because it would enable to avoid any overflow conditions while computing the sum of products (col. 12 lines 64-66).

Re claims 4-5, Peleg et al. do not disclose the rounding value is  $2^n$  and the selected shift amount is  $n+1$ , wherein  $n = 15$ . However, Suzuki et al. disclose the rounding value is  $2^n$  and the selected shift amount is  $n+1$ , wherein  $n = 15$  (col. 2 lines 59-69 and col. 3 lines 3-9 wherein  $n = 0$ ). Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention is made to add the rounding value is  $2^n$  and the selected shift amount for the intermediate result is  $n+1$ , wherein  $n = 15$  to Peleg et al.'s invention because it would enable to avoid any overflow conditions while computing the sum of products (col. 12 lines 64-66).

Re claim 14, Peleg et al. do not disclose the arithmetic circuit has a carry input connected to a mid-position, wherein the carry input is asserted in response to the rounding dot product instruction. However, Suzuki et al. disclose in Figure 25 the arithmetic circuit has a carry input connected to a mid-position, wherein the carry input is asserted in response to the rounding dot product instruction (267 and col. 2 lines 58-67). Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention is made to include a carry input connected to a mid-position in response to the rounding dot product instruction to Peleg et al.'s invention because it would enable to avoid any overflow conditions while computing the sum of products (col. 12 lines 64-66).

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6 Claim 15 is rejected under 35 U.S.C. 103(a) as being obvious over Peleg et al. (U.S. 5,983,256) in view of Silberfenig (U.S. 6,243,594).

Re claim 15, Peleg et al. do not disclose the above method being a cellular telephone as an integrated keyboard connected to the processor via a keyboard adapter; a display, connected to the processor via a display adapter; radio frequency (RF) circuitry connected to the processor; and an aerial connected to the RF circuitry. However, Silberfenig discloses in Figures 1-2 a cellular telephone as an integrated keyboard connected to the processor via a keyboard adapter; a display, connected to the processor via a display adapter; radio frequency (RF) circuitry connected to the processor; and an aerial connected to the RF circuitry. Therefore, it would have been obvious application to a person having ordinary skill in the art at the time the invention is made to use the above method in the device as disclosed in Silberfenig's invention because it would enable to improve the system of computing the dot products in signal processing (col. 19 lines 35-45).

### *Conclusion*

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- a. U.S. Patent No. 5,903,479 to Schwarz et al. disclose a method and system for executing denormalized numbers.
- b. U.S. Patent No. 5,666,300 to Adelman et al. disclose a power reduction in a data processing system using pipeline registers and method therefor.

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c. U.S. Patent No. 5,880,984 to Burchfiel et al. disclose a method and apparatus for performing high-precision multiply-add calculation using independent multiply and add instruments.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chat C. Do whose telephone number is (703) 305-5655. The examiner can normally be reached on M => F from 7:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chaki Kakali can be reached on (703) 305-9662. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 746-7239 for regular communications and (703) 746-7238 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

Chat C. Do  
Examiner  
Art Unit 2124

May 29, 2003



**CHUONG DINH NGO  
PRIMARY EXAMINER**